

Amendment and Response

Applicant: Craig D. Sunada et al.
Serial No.: 10/016,746
Filed: October 30, 2001
Docket No.: 10991022-8
Title: INNER PAPER GUIDE FOR MEDIA SHAPE CONTROL IN A PRINTER

REMARKS

This Amendment is responsive to the Non-Final Office Action mailed January 16, 2003. In that Office Action, claims 14-26 were rejected. With this Response, independent claims 14 and 20 have been amended, and a Terminal Disclaimer has been concurrently filed herewith. Claims 14-26 remain pending in the application and are presented for reconsideration and allowance.

Claim Rejections under 35 U.S.C. § 112, second paragraph

Claims 14-26 were rejected under 35 U.S.C. § 112, second paragraph. The Examiner cited to the use of the term “small,” as it occurs in claims 14 and 20. With this response, Applicants have amended independent claims 14 and 20 to remove the term “small.” Therefore, Applicants now believe independent claims 14 and 20 and the claims depending therefrom to be allowable over 35 U.S.C. § 112, second paragraph.

Double Patenting Rejections

Claims 14-26 were rejected under the judicially created Doctrine of Obviousness-Type Double Patenting as being unpatentable over claims 1-11 of U.S. Patent No. 6,312,178. In response to the rejection, Applicants have concurrently filed herewith a Terminal Disclaimer in compliance with 37 C.F.R. 1.321(c) relating to U.S. Patent No. 6,312,178. With respect to U.S. Patent No. 6,312,178, it is noted that the inventors are identical to those of the pending application. It is believed that the concurrently submitted Terminal Disclaimer properly traverses the rejection under the judicially created Doctrine of Obviousness-Type Double Patenting.

Claim Rejections under 35 U.S.C. § 102

Claims 14-16 were rejected under 35 U.S.C. § 102(e) as being anticipated by U.S. Patent No. 6,168,270 issued to Saikawa et al. (“Saikawa”). Saikawa relates to a recording apparatus having a sheet conveying force adjustment system. Applicants submit that Saikawa does not disclose Applicants claimed invention of claims 14-16.

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Independent claim 14 recites a media handling system for handling sheets of media including a pick roller structure, a drive roller structure, a media path extending between the pick roller structure and the drive roller structure, a first guide structure, and a second guide structure. The first guide structure and the second guide structure are positioned along a first longitudinal edge and a second longitudinal edge of the media path, respectively. The first media guide surface is above the sheet when passing along the media path, and the second media guide surface is below the sheet when passing along the media path. The media path between the first media guide surface and the second media guide surface has a media entrance adjacent the pick roller structure and a media exit adjacent the drive roller structure. The first and second guide surfaces are positioned such that a distance between the first and second guide surfaces at said media entrance constrains the movement of a trailing edge of the media sheet as the trailing edge leaves the pick roller between the pick roller structure and the drive roller structure to minimize trailing edge print defects. Applicants submit that the Saikawa reference fails to disclose Applicants' claimed invention of independent claim 14.

Saikawa discloses a recording apparatus having a sheet conveying force adjustment system. The apparatus of Saikawa includes a sheet supply roller 111, a convey roller 141 and a pinch roller 142. As recording sheet P is sent from sheet supply roller 111 to convey roller 141, recording sheet P "is guided by the platen 144, the pinch roller guide 143, and the upper guide 148." (Column 7, lines 8-11 and 34-37). As further illustrated in Figure 7, sheet supply roller 111, upper guide 148, platen 144, and pinch roller guide 143 all are above the print media path along which the media moves through the recording apparatus. The Saikawa reference does not include a second guide structure positioned along a second longitudinal edge of the media path and providing a second media guide surface below the sheet when passing along the media path.

The Examiner refers to a "second guide structure (noted in Fig. 7) positioned along a second longitudinal edge of the media path..." Applicants are unclear as to what the Examiner is referring to as the second guide structure (noted in Fig. 7). Applicants' first guide structure and second guide structure define a media path having a media entrance adjacent the pick roller structure and a media exit adjacent the drive roller structure. Examiner has defined upper guide 148 as the "first guide structure." As such, it appears that the Examiner is defining the lower arm of sheet supply unit 110 as the second guide structure.

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Regardless of whether the Examiner is referring to the lower arm of sheet supply unit 110 as the second guide structure or some other structure, Saikawa does not include a media path between the first guide structure and the second guide structure having a media entrance adjacent the pick roller structure and a media exit adjacent the driver roller structure as claimed by Applicants.

In further contrast, Applicants first and second guide surfaces are positioned such that a distance between the first and second guide surfaces at the media entrance constrains the movement of a trailing edge of the media sheet as the trailing edge leaves the pick roller between the pick roller structure and the drive roller structure to minimize trailing edge print defects. Again, Saikawa does not disclose such a structure, but rather is directed to varying the convey force to constantly convey the recording sheet to the recording apparatus in a reliable manner.

For at least the reasons stated above, Applicants submit that the invention of independent claim 14 is not anticipated by Saikawa.

Dependent claim 14 and dependent claim 15 depend either directly or indirectly upon independent claim 14, which as indicated above, Applicants believe to be in allowable form. Accordingly, Applicants believe these dependent claims in combination with independent claim 14 to be allowable over the art of record.

In further reference to dependent claim 14, Saikawa does not disclose a first guide structure and a second guide structure having first and second guide surfaces wherein said distance is greater at the media exit than at the media entrance. In further reference to claim 15, Saikawa does not disclose wherein said distance increases gradually from the media entrance to the media exit.

Claim Rejections under 35 U.S.C. § 103

Claim 17 is rejected under 35 U.S.C. § 103(a) as being unpatentable over Saikawa. Claims 18-26 are rejected under 35 U.S.C. § 103(a) as being unpatentable over Saikawa in view of U.S. Patent No. 5,940,106 to Walker.

Dependent claims 17-19 depend either directly or indirectly upon independent claim 1, which as indicated above, Applicant believes to be in allowable form. Accordingly,

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Applicant believes these dependent claims in combination with independent claim 1 to be allowable over the art of record.

Independent claim 20 recites an inkjet printer with improved media control to reduce trailing edge print defects. The printer includes an input tray for holding a stack of sheets of print media. An output tray is provided for receiving output sheets of media subsequent to printing operations. A media path extends between the input tray and the output tray. A pick roller structure is disposed on the media path having a circumferential media-contacting surface and arranged for rotation about a roller axis to advance a sheet along the media path from the input tray. A pick pinch roller structure is arranged relative to the pick roller structure to define a pinch nip therebetween. A drive roller structure is disposed on the media path downstream of the pick roller structure and arranged for rotation about a drive roller axis. A drive pinch roller structure is arranged relative to the drive roller structure to define a drive nip therebetween. A first guide structure positioned along a first longitudinal edge of the media path between the pick roller structure and the driver roller structure and providing a first media guide surface, said first guide surface being above a top surface of said sheet. A second guide structure is positioned along a second longitudinal edge of the media path between the pick roller structure and the driver roller structure and providing a second media guide surface, said second guide surface being below a bottom surface of said sheet. The media path being between the first guide structure and the second guide structure and having a media entrance adjacent the pick roller structure and a media exit adjacent the driver roller structure, and wherein a width of the media path defined by a distance between the first guide structure and the second guide structure at the media entrance constrains the movement of a trailing edge of a media sheet to minimize trailing edge print defects.

For the same reasons as stated above in reference to independent claim 14, Applicant believes Saikawa does not teach the claimed invention. The Walker reference is directed to a method of detecting the size of media loaded in a printer. Accordingly, Applicant does not believe Saikawa in further combination with Walker does not teach or suggest the claimed invention of independent claim 20.

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Dependent claims 21-26 depend either directly or indirectly upon independent claim 20, which as indicated above, Applicant believes to be in allowable form. Accordingly, Applicant believes dependent claims 21-26 in combination with independent claim 20 to be allowable over the art of record.

CONCLUSION

In light of the above, Applicant believes that independent claims 14 and 20 and the claims depending therefrom, are in condition for allowance. Allowance of these claims is respectfully requested.

Attached hereto is a marked-up version of the changes made to the specification and/or the claims by the current Amendment. The attached pages are captioned "**VERSION WITH MARKINGS TO SHOW CHANGES MADE**".

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Any inquiry regarding this Amendment and Response should be directed to James R. McDaniel at Telephone No. (208) 396-4095, Facsimile No. (208) 396-3958. In addition, all correspondence should continue to be directed to the following address:

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CERTIFICATE UNDER 37 C.F.R. 1.8: The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope addressed to: Commissioner for Patents, Washington, D.C., 20231 on this 10 day of April, 2003.

By Steven E. Dicke
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O I P E S C I E S

APR 16 2003

PATENT & TRADEMARK OFFICE

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Craig D. Sunada et al. Examiner: Kevin D. Williams
Serial No.: 10/016,746 Group Art Unit: 2854
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AMENDMENT AND RESPONSE

Commissioner for Patents
Washington, D.C. 20231

Dear Sir/Madam:

This Amendment and Response is in reply to the Non-Final Office Action mailed January 16, 2003. Please amend the above-identified patent application as follows:

IN THE CLAIMS

Please amend claims 14 and 20 as follows:

14. (Amended) A media handling system for handling sheets of media, comprising:
a pick roller structure having a circumferential media-contacting surface and arranged for rotation about a roller axis to contact and pick a sheet from an input source;
a drive roller structure arranged for rotation about a drive roller axis;
a media path extending between the pick roller structure and the drive roller structure;
a first guide structure positioned along a first longitudinal edge of the media path and providing a first media guide surface above the sheet when passing along the media path;
a second guide structure positioned along a second longitudinal edge of the media path and providing a second media guide surface below the sheet when passing along the media path;
the media path between the first guide structure and the second guide structure has a media entrance adjacent the pick roller structure and a media exit adjacent the drive roller structure, the first and second guide surfaces positioned such that a distance between the first and second guide surfaces ~~in the media path is sufficiently small at said media entrance to~~ constrains the movement of a trailing edge of the media sheet as the trailing edge leaves the pick roller between the pick roller structure and the drive roller structure to minimize trailing edge print defects.

*VERSION WITH MARKINGS
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15. The system of Claim 14 wherein said distance is greater at the media exit than at the media entrance.

16. The system of Claim 15 wherein said distance increases gradually from the media entrance to the media exit.

17. The system of Claim 14 wherein said distance is in the range between .5 mm and 5 mm.

18. The system of Claim 14 wherein the pick roller structure includes a plurality of spaced pick roller wheels, and wherein a corresponding plurality of pinch wheels are arranged to create nips between respective pick roller wheels and pinch wheels, and wherein the second guide structure is arranged to constrain and support a sheet of print media at regions between the nips, thereby reducing deformation of the sheet due to stresses exerted on the print medium at the nips.

19. The system of Claim 18 wherein said distance between the first guide structure and the second guide structure at said nips is in the range of .5 mm to 2 mm.

20. (Amended) An inkjet printer with improved media control to reduce trailing edge print defects, comprising:

an input tray for holding a stack of sheets of print media;

an output tray for receiving output sheets of media subsequent to printing operations;

a media path extending between the input tray and the output tray;

a pick roller structure disposed on the media path having a circumferential media-contacting surface and arranged for rotation about a roller axis to advance a sheet along the media path from the input tray;

a pick pinch roller structure arranged relative to the pick roller structure to define a pinch nip therebetween;

a drive roller structure disposed on the media path downstream of the pick roller structure and arranged for rotation about a drive roller axis;

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a drive pinch roller structure arranged relative to the drive roller structure to define a drive nip therebetween;

a first guide structure positioned along a first longitudinal edge of the media path between the pick roller structure and the drive roller structure and providing a first media guide surface, said first guide surface being above a top surface of said sheet;

a second guide structure positioned along a second longitudinal edge of the media path between the pick roller structure and the drive roller structure and providing a second media guide surface, said second guide surface being below a bottom surface of said sheet;

said media path being between the first guide structure and the second guide structure and having a media entrance adjacent the pick roller structure and a media exit adjacent the driver roller structure, and wherein a width of the media path defined by a distance between the first guide structure and the second structure ~~is sufficiently small at the media entrance to constrain~~ the movement of a trailing edge of a media sheet to minimize trailing edge print defects.

21. The printer of Claim 20 wherein the width of the media path is greater at the media exit than at the media entrance.

22. The printer of Claim 21 wherein the width of the media path increases gradually from the media entrance to the media exit.

23. The printer of Claim 20 wherein the width between the first guide surface and the second guide surface is in the range between .5 mm and 5 mm.

24. The printer of Claim 20 wherein the pick roller structure includes a plurality of spaced pick roller wheels, said pick pinch roller structure includes a corresponding plurality of pinch wheels arranged to create a plurality of pick nips between respective pick roller wheels and pinch wheels, and wherein the second guide structure is arranged to constrain and support a sheet of print media at regions between the plurality of pick nips, thereby reducing deformation of the sheet due to stresses exerted on the print medium at the nips.

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25. The printer of Claim 24 wherein said width of the media path between the first guide structure and the second guide structure at said plurality of pick nips is in the range of .5 mm to 2 mm.

26. The printer of Claim 24 wherein the width of the media path is greater at the media exit than at the media entrance.